January 2000

Mathematics 30

Grade 12 Diploma Examination

Alberta
LEARNING

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Mathematics 30

Grade 12 Diploma Examination

Description

Time: This examination was developed to be completed in 2.5 h; however, you may take an additional 0.5 h to complete the examination.

This is a **closed-book** examination consisting of

- 40 multiple-choice and 9 numerical-response questions, of equal value, worth 70% of the examination
- 3 written-response questions, of equal value, worth 30% of the examination

A tear-out formula sheet and a z-score page are included in this booklet.

All graphs on this examination are computer-generated.

Note: *The perforated pages at the back of this booklet may be torn out and used for your rough work.*
No marks *will be given for work done on the tear-out pages.*

Instructions

- You are expected to provide your own scientific calculator.
- Use only an HB pencil for the machine-scored answer sheet.
- Fill in the information required on the answer sheet and the examination booklet as directed by the presiding examiner.
- Read each question carefully.
- Consider all numbers used in the questions to be **exact** numbers and not the result of a measurement.
- If you wish to change an answer, erase **all** traces of your first answer.
- Do not fold the answer sheet.
- The presiding examiner will collect your answer sheet and examination booklet and send them to Alberta Learning.
- Now turn this page and read the detailed instructions for answering machine-scored and written-response questions.

Multiple Choice

- Decide which of the choices **best** completes the statement or answers the question.
- Locate that question number on the separate answer sheet provided and fill in the circle that corresponds to your choice.

Example

This examination is for the subject of

A. biology
B. physics
C. chemistry
D. mathematics

Answer Sheet

Ⓐ Ⓑ Ⓒ ●

Numerical Response

- Record your answer on the answer sheet provided by writing it in the boxes and then filling in the corresponding circles.
- If an answer is a value between 0 and 1 (e.g., 0.7), then be sure to record the 0 before the decimal place.
- **Enter the first digit of your answer in the left-hand box and leave any unused boxes blank.**

Examples

Calculation Question and Solution

Correct to the nearest tenth of a radian, 40° is equal to _____ rad.

$40^\circ = 0.6981317008\ldots \text{ rad}$
$= 0.7$

(Record your answer in the numerical-response section on the answer sheet.)

Record 0.7 on the answer sheet →

Correct-Order Question and Solution

When the following subjects are arranged in alphabetical order, the order is _____, _____, _____, and _____.

1 biology
2 physics
3 chemistry
4 mathematics

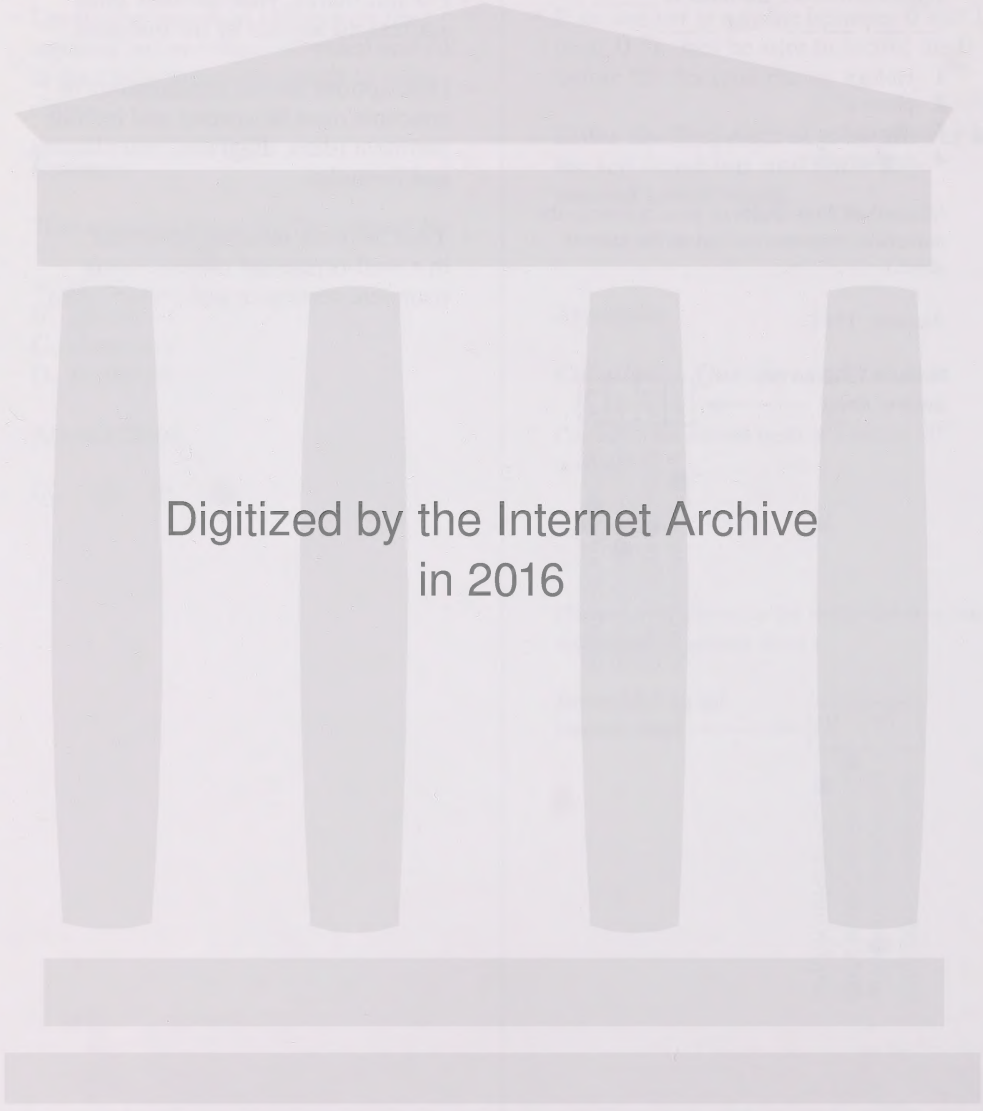
(Record **all four digits** of your answer in the numerical-response section on the answer sheet.)

Answer: 1342

Record 1342 on the answer sheet →

Written Response

- Write your answers in the examination booklet as neatly as possible.
- For full marks, your answers must address **all** aspects of the question.
- Descriptions and/or explanations of concepts must be correct and include pertinent ideas, diagrams, calculations, and formulas.
- Your answers must be presented in a well-organized manner using complete sentences and correct units.



1. If $f(x) = x^3 + 2x^2 + x - 1$, then $f(\sqrt{2})$ is

A. $4\sqrt{2} + 3$

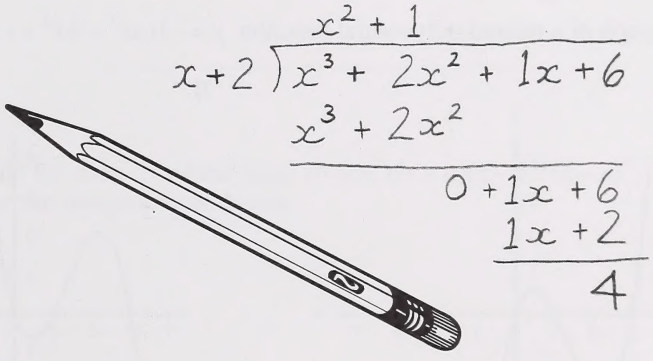
B. $4\sqrt{2} + 1$

C. $3\sqrt{2} + 7$

D. $3\sqrt{2} + 3$

Use the following information to answer the next question.

Fred divides $P(x) = x^3 + 2x^2 + x + 6$ by $(x + 2)$ as follows:



2. Fred's calculation demonstrates that

A. $(x + 2)$ is a factor of P

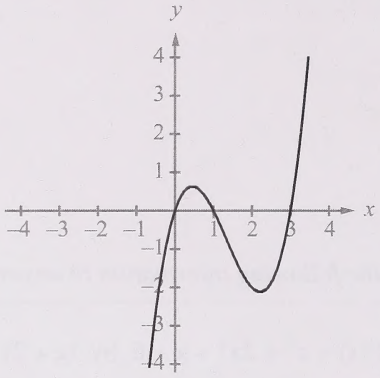
B. $(x^2 + 1)$ is a factor of P

C. $P(-2) = 0$

D. $P(-2) = 4$

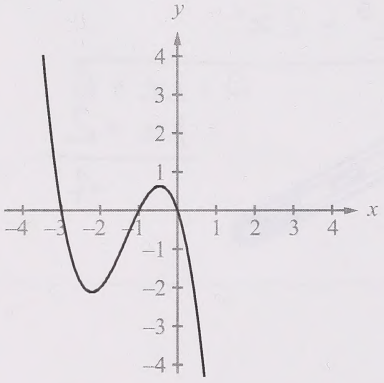
Use the following information to answer the next question.

The graph of a polynomial function $y = ax^3 + bx^2 + cx + d$ is shown below.

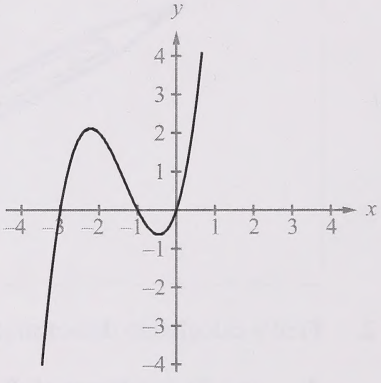


3. The graph of a related polynomial function $y = -1(ax^3 + bx^2 + cx + d)$ is

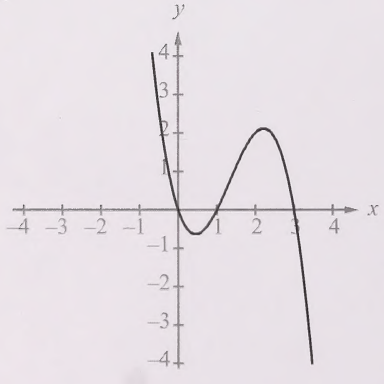
A.



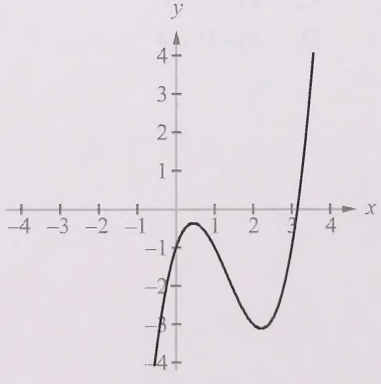
B.



C.



D.



Use the following information to answer the next question.

Points $A(1, k)$ and $B(-2, k)$ lie on the graph of the polynomial function $P(x) = 3x^3 + ax^2 + 1$. A student is asked to find the value of a. The student evaluates $P(1)$ to obtain

$$\begin{aligned} 3 + a + 1 &= k \\ 4 + a &= k \end{aligned}$$

4. If the student correctly completes her work, then she will find the value of a to be

A. -4

B. -3

C. 7

D. 9

---

5. A polynomial function P of the form $P(x) = x(x - a)(x - b)^2(x - c)^3$, where a, b, and c are integers, is of degree

A. 4

B. 5

C. 6

D. 7

6. A polynomial $P(x)$ is divided by $(x + 2)$. If the quotient is $Q(x)$ and the remainder is 3, then $P(-2)$ is

A. 3

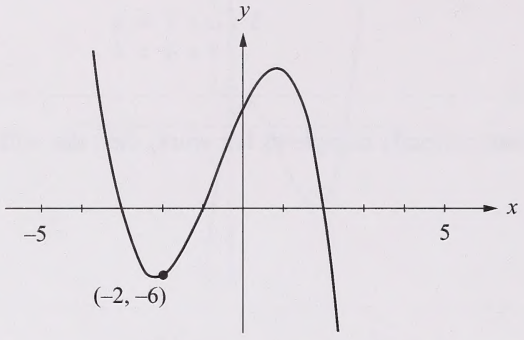
B. 2

C. -2

D. -3

Use the following information to answer the next question.

The graph of a third-degree polynomial function P with x-intercepts of -3, -1, and 2 is shown below. The point $(-2, -6)$ lies on the graph of $y = P(x)$.



7. The value of the y-intercept is

A. 6

B. 8

C. 9

D. 10

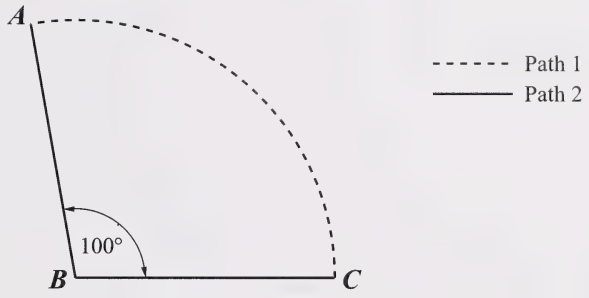
Numerical Response

1. If a polynomial function P is of degree five, then the greatest number of x-intercepts that the graph of $y = P(x)$ could have is _____.

(Record your answer in the numerical-response section on the answer sheet.)

Use the following information to answer the next question.

In the diagram below, two paths lead from point A to point C. Path 1 follows the arc of a circle that has a radius of 80 m centred at point B. Path 2 follows the line segments $\overline{AB}$ and $\overline{BC}$. The measure of $\angle ABC$ is 100°.



8. The length of path 1 is

A. greater than the length of path 2 by approximately 20.4 m

B. greater than the length of path 2 by approximately 640.0 m

C. less than the length of path 2 by approximately 20.4 m

D. less than the length of path 2 by approximately 22.2 m

9. The value of $\sum_{k=1}^{4} \cos\left(\frac{k\pi}{6}\right)$ is

A. $\frac{1}{2}$

B. $\frac{\sqrt{3}}{2}$

C. $\frac{3+2\sqrt{3}}{2}$

D. $\frac{2+\sqrt{3}}{2}$

10. If $\tan\theta = \frac{3}{4}$ and $0 \leq \theta \leq \frac{\pi}{2}$, then the value of $\sec\theta$ is

A. $\frac{3}{5}$

B. $\frac{4}{5}$

C. $\frac{5}{4}$

D. $\frac{5}{3}$

11. The expression $2\sin(4\theta)\cos(4\theta)$ is equal to

A. $4\sin(8\theta)$

B. $4\sin(2\theta)$

C. $\sin(2\theta)$

D. $\sin(8\theta)$

12. The expression $\frac{\tan^2\theta}{\sin^2\theta}$ is equivalent to

A. $\sec^2\theta$

B. $\csc^2\theta$

C. $\sec\theta$

D. $\csc\theta$

13. The period of the function $f(\theta) = 2\sin(5\theta - 3)$ is

A. $\frac{\pi}{5}$

B. $\frac{2\pi}{5}$

C. 5π

D. 10π

Numerical Response

2. The range of $y = a \sin\theta + b$ is $-1 \leq y \leq 5$. If a is positive, then the values of a and b are, respectively, _____ and _____.

(Record **both digits of your answer** in the numerical-response section on the answer sheet.)

Numerical Response

3. The value of θ that satisfies the equation $5\cos^2\theta - 3\cos\theta = 0$, $0° < \theta < 90°$, correct to the nearest tenth of a degree, is _____°.

(Record your answer in the numerical-response section on the answer sheet.)

14. Assume that cars travelling on highways have speeds that are normally distributed. On a particular highway, 12.92% of the cars are travelling above 110 km/h. If the mean speed on this highway is 105 km/h, then the standard deviation of the speed of the cars, correct to the nearest tenth, is

A. 4.4 km/h

B. 8.8 km/h

C. 15.2 km/h

D. 30.3 km/h

15. People who lived in the Philippines in 1980 went to the movies more often than the people of any other country in the world. The mean number of movies watched per person in the Philippines was 19 with a standard deviation of 3.3. If the data forms a normal distribution, then the percentage of the Philippine population that went to more than 15 movies in 1980 was

A. 11.31%

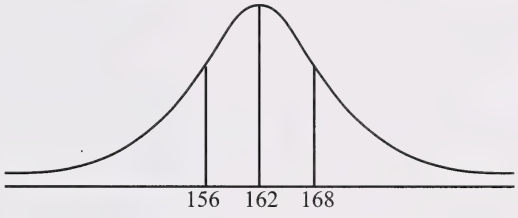
B. 38.69%

C. 61.31%

D. 88.69%

Use the following information to answer the next question.

The height of women between ages 18 and 24 is normally distributed with a mean of 162 cm and a standard deviation of 6 cm, as shown below.



The height of men between ages 18 and 24 is also normally distributed, but with a mean of 175 cm and standard deviation of 6 cm.

16. If the distribution of the height of the men is put on the same axes as the distribution of the height of the women, then the curve would be

A. a different shape: taller and narrower

B. a different shape: shorter and wider

C. the same shape, shifted to the right

D. the same shape, shifted to the left

Numerical Response

4. A number of students wrote a provincial examination. The results were normally distributed with a mean of 68 and a standard deviation of 10. If 198 students scored between 48 and 53, then the number of students who wrote this examination, correct to the **nearest hundred**, was _____.

(Record your answer in the numerical-response section on the answer sheet.)

17. Using a base of 6 cm, an architect must draw a set of triangles. Each triangle must have a perimeter of 14 cm. If the two vertices of the base are placed at $(-3, 0)$ and $(3, 0)$ on a Cartesian plane, then the third vertex of any of the triangles lies on a curve with equation

A. $\sqrt{(x+3)^2 + y^2} + \sqrt{(x-3)^2 + y^2} = 8$

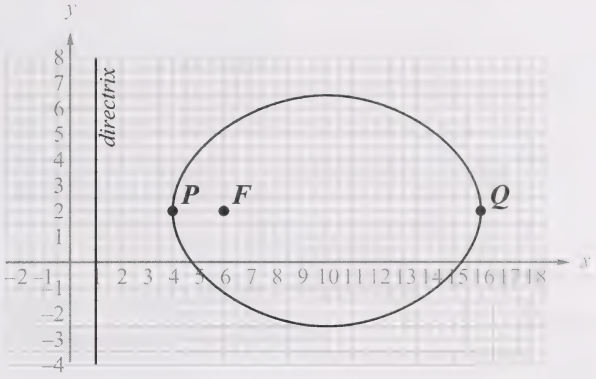
B. $2\sqrt{(x+3)^2 + y^2} = 8$

C. $\sqrt{(x+3)^2 + y^2} + \sqrt{(x-3)^2 + y^2} = 14$

D. $2\sqrt{(x+3)^2 + y^2} = 14$

Use the following information to answer the next two questions.

The ellipse shown below passes through the points $P(4, 2)$ and $Q(16, 2)$. One focus is at $F(6, 2)$, and the corresponding directrix is $x = 1$.



18. Two points on this ellipse have an x-coordinate of 6. The y-coordinates of these two points are

A. 0 and 4

B. $-\frac{4}{3}$ and $\frac{16}{3}$

C. –8 and 12

D. –10 and 14

19. The eccentricity of the ellipse above is

A. $\frac{2}{5}$

B. $\frac{2}{3}$

C. 2

D. $\frac{12}{5}$

Use the following information to answer the next question.

A student graphed a conic defined by $Ax^2 + Cy^2 + F = 0$. The student chose values for A, C, and F that satisfy the following conditions.

$$A > 0$$
$$C > A$$
$$F < 0$$

20. The conic graphed by this student is

A. a hyperbola with foci on the y-axis

B. a hyperbola with foci on the x-axis

C. an ellipse with foci on the y-axis

D. an ellipse with foci on the x-axis

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21. A plane parallel to the generator of a right circular conical surface passes through the vertex of the cone. The degenerate conic produced is

A. a line

B. a point

C. two parallel lines

D. two intersecting lines

22. A parabola has a focus at $(2, 4)$ and a directrix at $y = -6$. If $(2, y)$ is a point on the parabola, then the value of y is

A. -2

B. -1

C. 0

D. 1

Numerical Response

5. A quadratic relation is defined by the equation $4x^2 + 4y^2 - 28x - 32 = 0$. The value of the positive y-intercept, correct to the nearest tenth, is _____.

(Record your answer in the numerical-response section on the answer sheet.)

23. If the general term of an arithmetic sequence is $t_n = 3 - 2n,\ n \in N$, then the sequence can also be defined recursively as

A. $t_n = t_{n-1} - 2$, where $t_1 = 1$ and $n > 1$

B. $t_n = t_{n-1} + 2$, where $t_1 = 1$ and $n > 1$

C. $t_n = t_{n-1} + 3$, where $t_1 = 1$ and $n > 1$

D. $t_n = 2t_{n-1} - 3$, where $t_1 = 1$ and $n > 1$

24. The sum of the first eight terms of an arithmetic sequence is 136. The sum of the first 11 terms of the same sequence is 253. The common difference is

A. 2

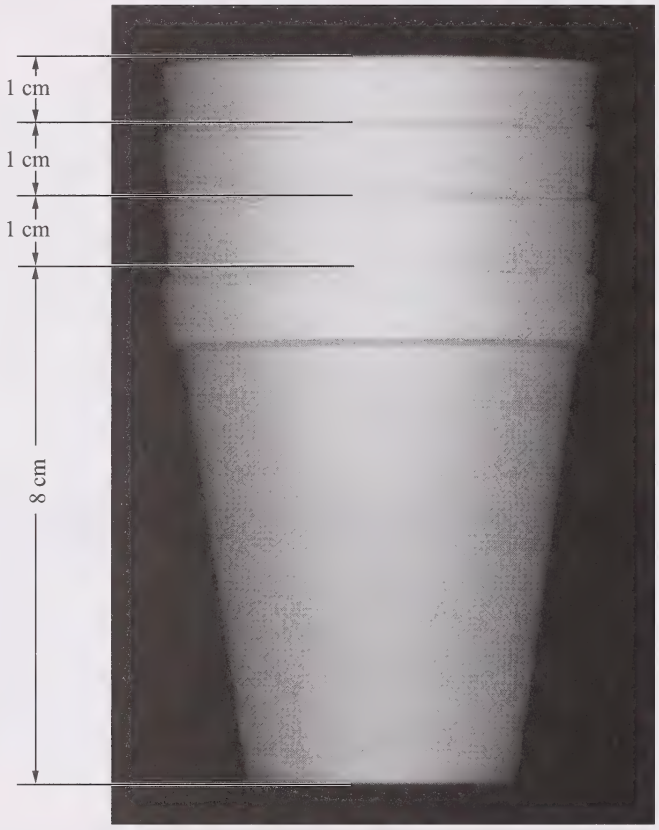
B. 4

C. 11.7

D. 39

Use the following information to answer the next question.

Disposable cups that are 8 cm high with a 1 cm rim are stored stacked together, as shown below.



25. The height of a stack of n cups forms an arithmetic sequence, t_n, where n is the number of cups. What is the greatest number of disposable cups that can be stacked upright in a cupboard that is 75 cm high?

A. 66

B. 67

C. 68

D. 69

26. The value of $\sum_{n=1}^{10} (\log_2 8)^n$ is

A. 165

B. 59 049

C. 88 572

D. 1 398 100

27. An arithmetic sequence with a common difference of 11.4 and a geometric sequence with a common ratio of 2 have the same first term. If the sum of the first 6 terms of each of the two sequences is the same, then the first term of each sequence, correct to the nearest tenth, is

A. 1.8

B. 3.0

C. 5.7

D. 6.7

28. The solutions to the equation $\sin\theta - 1 = 0,\ \theta \geq 0,$ are $\theta = \frac{\pi}{2} + 2n\pi,\ n \in W.$ Written in ascending order, the values of θ form

A. a geometric sequence with a common ratio of 2π

B. a geometric sequence with a common ratio of $\frac{\pi}{2}$

C. an arithmetic sequence with a common difference of 2π

D. an arithmetic sequence with a common difference of $\frac{\pi}{2}$

Use the following information to answer the next question.

There are three scenarios outlined below.

1 A child is swinging. The length of each swing after the first is nine-tenths of the length of the previous swing. The distance travelled in each swing forms a sequence.

2 An 8-inch pizza costs \$5.00 and **each** additional topping costs \$1.00. The cost of a pizza with n toppings forms a sequence.

3 A person recorded the mean temperature in degrees Celsius for five consecutive days in November as follows: -4, -3, 0, 1, and 3. The temperatures form a sequence.

Numerical Response

6. Match the scenarios, as numbered above, with the appropriate type of sequence given below.

Arithmetic _____ (Record in the first column.)

Geometric _____ (Record in the second column.)

Neither arithmetic nor geometric _____ (Record in the third column.)

(Record **all three digits** of your answer in the numerical-response section on the answer sheet.)

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29. Of 15 rats in a cage, 5 have a blood disorder, another 6 have a bone disorder, and the remaining 4 are healthy. If 3 rats are randomly chosen from the cage, then the probability that all of the selected rats are healthy, correct to the nearest thousandth, is

A. 0.750

B. 0.267

C. 0.053

D. 0.009

30. The value of ${}_aC_5$, where $a \in N$ and $a > 5$, is equal to the value of

A. ${}_5C_a$

B. ${}_{a-5}C_5$

C. ${}_aC_{a-5}$

D. ${}_aC_{5-a}$

31. Assume that in a given set of 3-digit area codes, the middle digit of each code is either "0" or "1." Which of the following conditions on the digits would result in exactly 180 area codes?

A. The first digit cannot be zero, and the third digit must be different from the first.

B. There are no restrictions on the possible values.

C. All three digits must be different.

D. The first digit cannot be zero.

32. If $(x-1)^5 = a_5x^5 + a_4x^4 + a_3x^3 + a_2x^2 + a_1x + a_0$, then the value of $a_5 + a_4 + a_3 + a_2 + a_1 + a_0$ is

A. –32

B. 0

C. 1

D. 32

33. Each letter of the word **CANADA** is placed on a card, as shown below.

C	A	N	A	D	A

These cards are shuffled thoroughly and then placed face down, as shown below.

When all of the cards are turned over, what is the probability that they will spell **CANADA**?

A. $\frac{1}{36}$

B. $\frac{1}{120}$

C. $\frac{1}{240}$

D. $\frac{1}{720}$

Numerical Response

7. A committee of 2 teachers and 3 students is to be randomly chosen from a group of 5 teachers and 6 students. The total number of different committees possible is _____.

(Record your answer in the numerical-response section on the answer sheet.)

Numerical Response

8. A photographer arranges 7 children in a row in random order. The number of arrangements that are possible so that 2 of the children, Chris and Pat, are next to each other is _____.

(Record your answer in the numerical-response section on the answer sheet.)

34. If $\log_3(2x - y) = 2$ and $\log_2(x + 2y) = 5$, then the value of y, correct to the nearest tenth, is

A. –14.6
B. –8.2
C. 11.0
D. 18.3

35. The expression $\log_5 25^k$ is equal to

A. $2k$
B. k^2
C. $25k$
D. 25^k

36. The sequence given by $\log_4 4$, $\log_4 8$, $\log_4 16$, $\log_4 32$ is

A. geometric with a common ratio of $\log_4 2$

B. geometric with a common ratio of 2

C. arithmetic with a common difference of $\frac{1}{2}$

D. arithmetic with a common difference of 2

37. If $\sin x > 0$ and $\cos x > 0$, then the expression $\log(\sin x) - \log(\cos x) + \log(\cot x)$ is equal to

A. 0

B. 1

C. $\log(\cos^2 x)$

D. $\log(\sin^2 x)$

38. The atmospheric pressure P, in kilopascals (kPa), at a distance d, in kilometres above Earth, is given by the formula $P = 100(10^{-0.0542d})$. A particular plane is designed to fly safely when the atmospheric pressure is greater than 15 kPa. The plane can fly safely to a maximum height of

A. 15.5 km

B. 15.2 km

C. 10.9 km

D. 2.8 km

39. The graph of $y = a^{x-2}$ has a y-intercept of

A. $\frac{1}{a^2}$

B. $-\frac{1}{a^2}$

C. $-a^2$

D. 2

40. The point $(64, 4)$ lies on the graph of $y = \log_b x$. If the point $(2, k)$ lies on the graph of $y = b^x$, then the value of k is

A. 8

B. 16

C. 32

D. 256

Numerical Response

9. If $\log_b a = 0.82$, then the value of $\log_b\left(\frac{b}{a}\right)$, correct to the nearest hundredth, is _____.

(Record your answer in the numerical-response section on the answer sheet.)

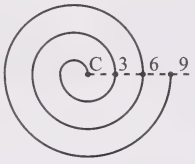
The written-response questions follow on the next page.

Use the following information to answer the next question.

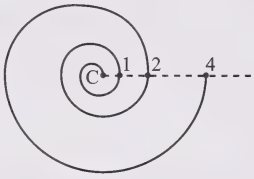
A spiral is a curve that is traced by a point around a fixed point, C (the centre), at a continually increasing distance from that point.

Two different spirals are shown below. One loop of each spiral is complete when the locus traced by the point has moved through a central angle of 360°. For each spiral, the distance, in units, from the centre C to the end of the first 3 successive complete loops is labelled.

Spiral A



Spiral B



The successive distances of the end of the loops of the spirals from their respective centres are defined recursively as follows:

Spiral A
$t_n = t_{n-1} + 3,\ t_1 = 3$

Spiral B
$t_n = 2t_{n-1},\ t_1 = 1$

If the successive distances from the centre of a loop to the end of the loop of a spiral form a geometric sequence, then the spiral is called **logarithmic**. If they form an arithmetic sequence, the spiral is called **Archimedean**.

Written Response—10%

1. • The successive distances of the end of the loops of spiral A from its centre are defined recursively as $t_n = t_{n-1} + 3,\ t_1 = 3$. Determine whether spiral A is logarithmic or Archimedean, and justify your choice.

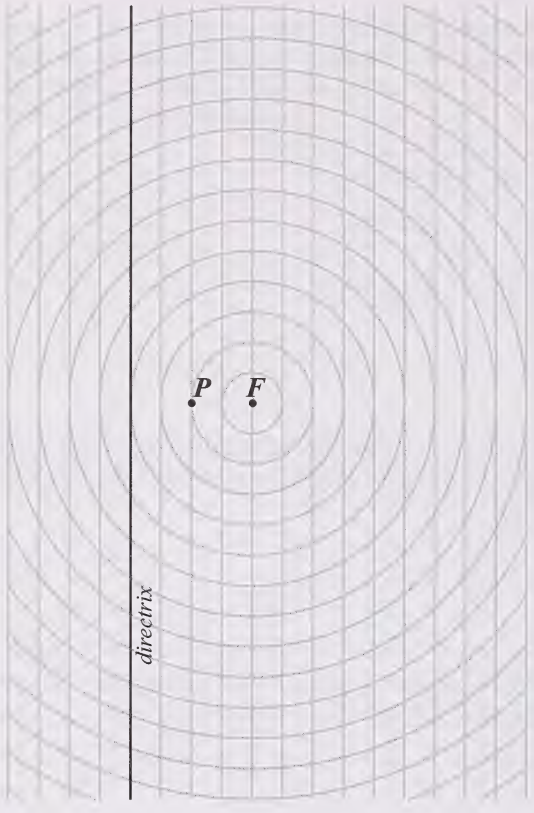
- Determine the distance from the centre to the end of the 6^{th} loop for both spiral A and spiral B.

- Determine the maximum number of complete loops that occur for **each** spiral if the distance from the centre C to the end of the last loop does not exceed 1 500 units.

Written-response question 2 begins on the next page.

Use the following information to answer the next question.

The focus, F, and directrix of a quadratic relation are shown below on circle–line graph paper. Point P lies on this quadratic relation.



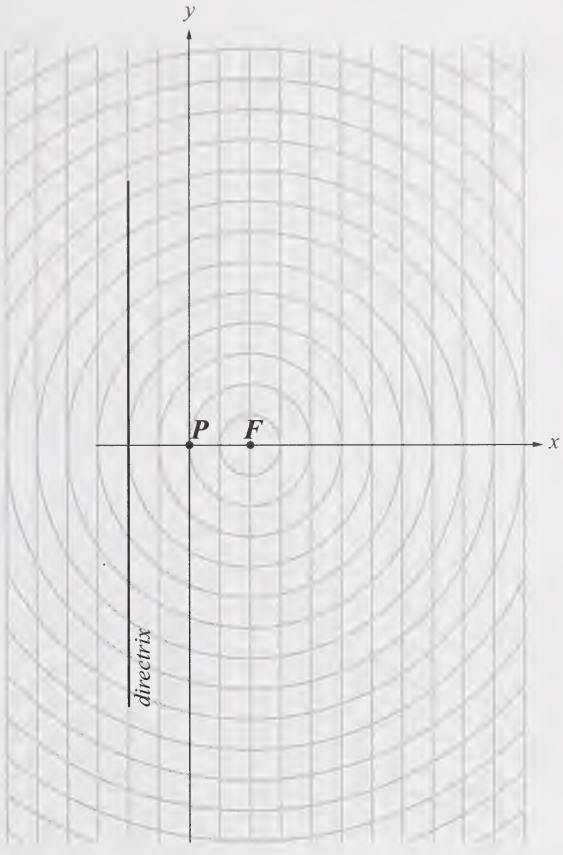
Written Response—10%

2. • On the circle–line graph paper above, sketch the graph of the quadratic relation that passes through point P and that has the given focus F and the given directrix.

• Explain what conditions were met if this quadratic relation was obtained by cutting a double-napped cone with a plane. A diagram may aid your explanation.

Use the following additional information to answer the next part of the question.

A Cartesian plane is superimposed over circle–line graph paper, as shown below. Point P is at the origin.



- Suppose the equation of your graph is $Ax^2 + Cy^2 + Dx + Ey + F = 0$. State **one** of the parameters in this relation that must equal zero in order for the equation to describe your graph. Justify your answer.

- A new directrix is defined by $x = -1$. If the point $P(0, 0)$ lies on a quadratic relation with this directrix and focus (2, 0), then a new conic is formed. Determine which type of conic is formed, and justify your answer.

Written-response question 3 begins on the next page.

Use the following information to answer the next question.

The graphs of many functions pass through the point $P(0, 2)$.

Written Response—10%

3. Write an equation for **each** type of function listed below such that the graph of the function will pass through the point $P(0, 2)$.

cubic polynomial function:

trigonometric function:

exponential function:

- Choose any **two** of the three types of functions listed (cubic polynomial, trigonometric, exponential). For each of your choices, write an equation such that the graph of the function will pass through a point $Q(0, k)$.

You have now completed the examination.
If you have time, you may wish to check your answers.

Mathematics 30 Formula Sheet

The following information may be useful in writing this examination.

- The roots of the quadratic equation $ax^2 + bx + c = 0$ are

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

- The distance between two points (x_1, y_1) and (x_2, y_2) is

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Quadratic Relations

- $e = \dfrac{|\overline{PF}|}{|\overline{PD}|}$

Trigonometry

- arc length $a = r\theta$
- $\sin^2 A + \cos^2 A = 1$
- $1 + \tan^2 A = \sec^2 A$
- $1 + \cot^2 A = \csc^2 A$
- $\csc A = \dfrac{1}{\sin A}$
- $\sec A = \dfrac{1}{\cos A}$
- $\cot A = \dfrac{\cos A}{\sin A}$
- $\sin(A + B) = \sin A \cos B + \cos A \sin B$
- $\sin(A - B) = \sin A \cos B - \cos A \sin B$
- $\cos(A + B) = \cos A \cos B - \sin A \sin B$
- $\cos(A - B) = \cos A \cos B + \sin A \sin B$

Permutations and Combinations

- ${}_nP_r = \dfrac{n!}{(n-r)!}$
- ${}_nC_r = \dfrac{n!}{r!(n-r)!}$
- In the expansion of $(x + y)^n$, the general term is $t_{k+1} = {}_nC_k x^{n-k} y^k$

Sequences and Series

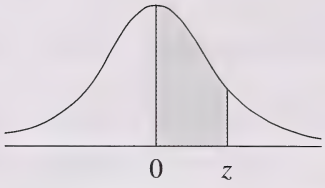
- $t_n = a + (n-1)d$
- $S_n = \dfrac{n[2a + (n-1)d]}{2}$
- $S_n = n\left(\dfrac{a + t_n}{2}\right)$
- $t_n = ar^{n-1}$
- $S_n = \dfrac{a(r^n - 1)}{r - 1}$, $r \neq 1$
- $S_n = \dfrac{rt_n - a}{r - 1}$, $r \neq 1$

Exponential and Logarithmic Functions

- $\log_a mn = \log_a m + \log_a n$
- $\log_a \dfrac{m}{n} = \log_a m - \log_a n$
- $\log_a m^n = n \log_a m$

Fold and tear along perforation.

$$z = \frac{x - \mu}{\sigma}$$



Areas under the Standard Normal Curve

z	0	1	2	3	4	5	6	7	8	9
0.0	0.0000	0.0040	0.0080	0.0120	0.0160	0.0199	0.0239	0.0279	0.0319	0.0359
0.1	0.0398	0.0438	0.0478	0.0517	0.0557	0.0596	0.0636	0.0675	0.0714	0.0754
0.2	0.0793	0.0832	0.0871	0.0910	0.0948	0.0987	0.1026	0.1064	0.1103	0.1141
0.3	0.1179	0.1217	0.1255	0.1293	0.1331	0.1368	0.1406	0.1443	0.1480	0.1517
0.4	0.1554	0.1591	0.1628	0.1664	0.1700	0.1736	0.1772	0.1808	0.1844	0.1879
0.5	0.1915	0.1950	0.1985	0.2019	0.2054	0.2088	0.2123	0.2157	0.2190	0.2224
0.6	0.2258	0.2291	0.2324	0.2357	0.2389	0.2422	0.2454	0.2486	0.2518	0.2549
0.7	0.2580	0.2612	0.2642	0.2673	0.2704	0.2734	0.2764	0.2794	0.2823	0.2852
0.8	0.2881	0.2910	0.2939	0.2967	0.2996	0.3023	0.3051	0.3078	0.3106	0.3133
0.9	0.3159	0.3186	0.3212	0.3238	0.3264	0.3289	0.3315	0.3340	0.3365	0.3389
1.0	0.3413	0.3438	0.3461	0.3485	0.3508	0.3531	0.3554	0.3577	0.3599	0.3621
1.1	0.3643	0.3665	0.3686	0.3708	0.3729	0.3749	0.3770	0.3790	0.3810	0.3830
1.2	0.3849	0.3869	0.3888	0.3907	0.3925	0.3944	0.3962	0.3980	0.3997	0.4015
1.3	0.4032	0.4049	0.4066	0.4082	0.4099	0.4115	0.4131	0.4147	0.4162	0.4177
1.4	0.4192	0.4207	0.4222	0.4236	0.4251	0.4265	0.4279	0.4292	0.4306	0.4319
1.5	0.4332	0.4345	0.4357	0.4370	0.4382	0.4394	0.4406	0.4418	0.4429	0.4441
1.6	0.4452	0.4463	0.4474	0.4484	0.4495	0.4505	0.4515	0.4525	0.4535	0.4545
1.7	0.4554	0.4564	0.4573	0.4582	0.4591	0.4599	0.4608	0.4616	0.4625	0.4633
1.8	0.4641	0.4649	0.4656	0.4664	0.4671	0.4678	0.4686	0.4693	0.4699	0.4706
1.9	0.4713	0.4719	0.4726	0.4732	0.4738	0.4744	0.4750	0.4756	0.4761	0.4767
2.0	0.4772	0.4778	0.4783	0.4788	0.4793	0.4798	0.4803	0.4808	0.4812	0.4817
2.1	0.4821	0.4826	0.4830	0.4834	0.4838	0.4842	0.4846	0.4850	0.4854	0.4857
2.2	0.4861	0.4864	0.4868	0.4871	0.4875	0.4878	0.4881	0.4884	0.4887	0.4890
2.3	0.4893	0.4896	0.4898	0.4901	0.4904	0.4906	0.4909	0.4911	0.4913	0.4916
2.4	0.4918	0.4920	0.4922	0.4925	0.4927	0.4929	0.4931	0.4932	0.4934	0.4936
2.5	0.4938	0.4940	0.4941	0.4943	0.4945	0.4946	0.4948	0.4949	0.4951	0.4952
2.6	0.4953	0.4955	0.4956	0.4957	0.4959	0.4960	0.4961	0.4962	0.4963	0.4964
2.7	0.4965	0.4966	0.4967	0.4968	0.4969	0.4970	0.4971	0.4972	0.4973	0.4974
2.8	0.4974	0.4975	0.4976	0.4977	0.4977	0.4978	0.4979	0.4979	0.4980	0.4981
2.9	0.4981	0.4982	0.4982	0.4983	0.4984	0.4984	0.4985	0.4985	0.4986	0.4986
3.0	0.4987	0.4987	0.4987	0.4988	0.4988	0.4989	0.4989	0.4989	0.4990	0.4990
3.1	0.4990	0.4991	0.4991	0.4991	0.4992	0.4992	0.4992	0.4992	0.4993	0.4993
3.2	0.4993	0.4993	0.4994	0.4994	0.4994	0.4994	0.4994	0.4995	0.4995	0.4995
3.3	0.4995	0.4995	0.4995	0.4996	0.4996	0.4996	0.4996	0.4996	0.4996	0.4997
3.4	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4998
3.5	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998
3.6	0.4998	0.4998	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999
3.7	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999
3.8	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999
3.9	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000

Fold and tear along perforation.

No marks will be given for work done on this page.

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